

DETAILED ACTION

Claim Objections

1. Claim 17 is objected to because of the following informalities: "wherein the a focal plane" is incorrectly written. Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 16, 17, 21-23, 25, 26, 28, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Itsumi (US 5,101,278).

Claim 16, Itsumi teaches a miniaturized camera (video camera, Fig. 1) apparatus including a housing comprising:

- a housing (inherent, Fig. 1);
- a lens fixedly mounted to the housing (lens group 11 is fixed);
- a sensor (20) configured as a focal plane of the lens;
- a piezo element (piezoelectric actuator 30) configured to displace the sensor, wherein the piezo element is disposed touching the sensor (col. 3, lines 53-56); and

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- connectors configured to make contact with the sensor, wherein the connectors include at least one flex foil (sensor 20 is mounted on flexible printed board 32; col. 4, lines 60-63, Fig. 2A).

However, Itsumi does not disclose expressly wherein the connectors include two cutouts. At the time of the invention, it would have been obvious to a person having ordinary skill in the art to include holes in a circuit board. Applicant has not disclosed that the two cutouts provides a particular advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well without the two cutouts. Therefore, it would have been obvious to modify Itsumi to obtain the two cutouts and the invention as specified in claim 1.

Claim 17, Itsumi teaches the camera apparatus as defined in claim 16, wherein the focal plane is displaced by the piezo element (col. 4, lines 1-15).

Claim 21, Itsumi teaches the camera apparatus as defined in claim 16, wherein connectors are configured to allow the sensor to move parallel to the lens (col. 4, lines 8-9, 19-54).

Claim 22, Itsumi teaches the camera apparatus as defined in claim 16, wherein the sensor is arranged on the connectors (sensor 20 is mounted on a flexible printed board 32).

Claim 23, Itsumi teaches the camera apparatus as defined in claim 16, but does not teach wherein the cutouts are elliptical in shape.

At the time of the invention, it would have been obvious to a person having ordinary skill in the art to include holes in a circuit board. Applicant has not disclosed that the two elliptical cutouts provides a particular advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well without the two elliptical cutouts. Therefore, it would have been obvious to modify Itsumi to obtain the two elliptical cutouts and the invention as specified in claim 23.

Claim 25, Itsumi teaches the camera apparatus as defined in claim 16, wherein the connectors are disposed in a connecting area with the sensor (Sensor 20 is mounted on flexible printed board. The area of the sensor at which the flexible printed board makes contact is the connecting area; col. 4, lines 60-63).

Claim 26, Itsumi teaches the camera apparatus as defined in claim 16, further comprising an infrared filter (low pass filter 15; col. 3, lines 41-45).

Claim 28, Itsumi teaches the camera apparatus as defined in claim 16, wherein the housing is configured to protect the camera apparatus against environmental effects (it

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is inherent that a housing is formed to protect the internals of a camera from the environment, e.g., dust, moisture, etc.).

Claim 29, Itsumi teaches the camera apparatus as defined in claim 16, further comprising: an image processor (defocus detection circuit 40) including an algorithm that effects autofocus control of the camera apparatus (col. 3, lines 59-67).

4. Claims 18-20, 24, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Itsumi in view of Hokari (US 5,748,448).

Claim 18, Itsumi teaches the camera apparatus as defined in claim 16, but does not expressly teach wherein the connectors are selected from the group consisting of cables, wires, and bond wires.

Hokari teaches, in Figs. 7A and 7B, wherein bond wires (5) are used to connect a sensor (1) to a flexible circuit board (22).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the bond wire connectors of Hokari with the camera apparatus of Itsumi in order to obtain compact accommodation of the solid state image sensor with the other components mounted therein in the camera housing. (See col. 4, lines 53-54 of Hokari.)

Claim 19, Hokari teaches wherein the connectors provide a connection between the sensor and a circuit board (Figs. 4-7, col. 6, lines 12-15).

Claim 20, Hokari teaches wherein the circuit board is selected from the group consisting of a standard circuit board, a flexible circuit board, and a flex foil (flexible circuit board 22, col. 6, lines 8-9).

Claim 24, Hokari teaches wherein the flexible circuit board is mounted via screws to the camera housing (col. 6, lines 23-30).

Claim 27, Hokari teaches a protective glass (glass cap 6), but does not expressly teach wherein the glass cap is over the lens. However, it would have been obvious to a person having ordinary skill in the art to include a fixed lens within the housing and a glass cap to protect the lens from scratches.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHIA-WEI A. CHEN whose telephone number is (571)270-1707. The examiner can normally be reached on Monday - Friday, 7:30 - 17:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, NgocYen Vu can be reached on (571) 272-7320. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/Chia-Wei A Chen/
Examiner, Art Unit 2622
06/03/2008

***/Ngoc-Yen T. VU/
Supervisory Patent Examiner, Art Unit 2622***